TECHNICAL REVIEW DOCUMENT
For
RENEWAL TO OPERATING PERMIT 95OPDE049

Public Service Company – Denver Steam Plant
Denver County
Source ID 0310041

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Revised February 2009

I. Purpose:

This document will establish the basis for decisions made regarding the applicable requirements, emission factors, monitoring plan and compliance status of emission units covered by the renewed operating permit proposed for this site. The current Operating Permit was issued January 1, 2002. The expiration date for the permit was January 1, 2007. However, since a timely and complete renewal application was submitted, under Colorado Regulation No. 3, Part C, Section IV.C all of the terms and conditions of the existing permit shall not expire until the renewal operating permit is issued and any previously extended permit shield continues in full force and operation. This document is designed for reference during the review of the proposed permit by the EPA, the public, and other interested parties. The conclusions made in this report are based on information provided in the renewal application submitted November 14, 2005, comments on the draft permit and technical review document receive don January 29, 2009, previous inspection reports and various e-mail correspondence, as well as telephone conversations with the applicant. Please note that copies of the Technical Review Document for the original permit and any Technical Review Documents associated with subsequent modifications of the original Operating Permit may be found in the Division files as well as on the Division website at http://www.cdphe.state.co.us/ap/Titlev.html. This narrative is intended only as an adjunct for the reviewer and has no legal standing.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised construction permit.

II. Description of Source

This facility generates steam sold for heating and other purposes and is classified under the Standard Industrial Classification 4961. The significant emission units at this facility consist of two industrial boilers burning natural gas and/or No. 2 fuel oil to produce steam. Based on the information available to the Division and provided by the applicant, it appears that no modifications to these significant emission units have occurred since the original issuance of the operating permit.

Note that neither boiler is equipped with a control device and therefore the Compliance Assurance Monitoring (CAM) requirements do not apply to these units.

The facility is located at 1875 Delganey Street near downtown Denver. The Denver metro area is classified as attainment/maintenance for particulate matter less than 10 microns (PM_{10}) and carbon monoxide. Under that classification, all SIP-approved requirements for PM_{10} and CO will continue to apply in order to prevent backsliding under the provisions of Section 110(l) of the Federal Clean Air Act. The Denver Metro Area is classified as nonattainment for ozone and is part of the 8-hr Ozone Control Area as defined in Colorado Regulation No. 7, Section II.A.16.

Eagles Nest National Wilderness Area and Rocky Mountain National Park, both federal class I designated areas, are within 100 km of this facility.

The summary of emissions that was presented in the Technical Review Document (TRD) for the previous renewal permit issuance has been modified to update potential and actual emissions. The emissions in the table below represent emissions from both boilers together, no other equipment is included in this total.

Pollutant	Potential to Emit (PTE) 100% Natural Gas	100% No. 2 Fuel Oil	Actual Emissions – Combination
PM[1]	242.1	242.1	1.2
PM_{10}	242.1	242.1	1.2
SO_2[2]	1.2	2,976.2	0.4
NO_X	544.7	341.1	171.8
CO	163.4	70.9	51.6
VOC	10.7	2.8	3.4
Total HAPS	3.67	1.8	
Highest Single HAP[3]	3.5	1.2	

[1]PTE, when burning any fuel, is based on the Reg 1 PM limit (0.124 lbs/mmBtu – boiler 1 and 0.120 lb/mmBtu - boiler 2) x design heat rate x 8760 hrs/yr. PM_{10} is assumed to be 100% PM.
[2]PTE, when burning No. 2 fuel oil, is based on the Reg 1 SO_2 limit (1.5 lbs/mmBtu for each boiler) x design heat rate x 8760 hrs/yr.
[3]Highest single HAP is hexane, when burning natural gas and nickel when burning No. 2 fuel oil.

Potential to emit for the boilers is based on the information identified in the table and the maximum hourly fuel consumption rate, AP-42 emission factors and 8760 hrs/yr of operation. Actual emissions are based on APENs submitted on April 9, 2007 for boiler 1 (2006 data) and April 30, 2003 for boiler 2 (2002 data).

In the above table, the breakdown of HAP emissions by fuel burned and individual HAPs is provided on page 9 of this document. As discussed in the table footnotes on this page, HAPS emissions are based on the maximum hourly fuel consumption rate, 8760 hrs/yr of operation and the AP-42 emission factors.

MACT Requirements

The facility is not a major source for HAP emissions. Therefore, none of the MACT standards that apply to major sources apply to this facility. Recently MACT requirements have been promulgated for various area sources (i.e. minor sources of HAP emissions. The applicability of those requirements is as follows:

Reciprocating Internal Combustion Engines (40 CFR Part 63 Subpart ZZZZ)

There are engines included in the insignificant activity list (Appendix A) of this permit. Revisions were made to the RICE MACT (published in the federal register on January 18, 2008) to address engines (any size) located at area sources. Based on the revisions, existing (construction or reconstruction commences after June 12, 2006) engines do not have to meet the requirements of Subparts A and ZZZZ, including the initial notification requirements (40 CFR Part 63 Subpart ZZZZ § 63.6590(b)(3)). Since the engines have been included in the insignificant activity list since the initial Title V permit issuance (December 18, 1996), these engines would quality as existing engines and the area source MACT provisions do not apply.

Paint Stripping and Miscellaneous Surface Coating at Area Sources (40 CFR Part 63 Subpart HHHHHH)

The final rules for paint stripping and miscellaneous surface coating were published in the federal register on January 9, 2008 and apply to area sources that perform paint stripping operations using methylene chloride, spray application of coatings to motor vehicles and mobile equipment and spray application of coatings that contain the target HAPS (chromium, lead, manganese, nickel or cadmium). As indicated in 40 CFR Part 63 § 63.11170(a)(2) and (3), spray applications (to motor vehicles and using coatings that contain the target HAPS) that meet the definition of facility maintenance are not subject to the requirements in this rule. The Division considers that any spray coatings of motor vehicles and mobile equipment and spray application of coatings that contain the target HAP at this facility would meet the definition of facility maintenance. It is not clear whether any paint stripping operations that involve the use of chemical strippers that contain methylene chloride are used. In their January 29, 2009 comments on the draft permit and technical review document, the source indicated that none of the paint stripping activities at the pant use materials that contain methylene chloride.

III. Discussion of Modifications Made

Source Requested Modifications

The source's requested modifications identified in the renewal application were addressed as follows:

No changes were requested in the renewal application. The source submitted comments on the draft permit on January 29, 2009. Based on these comments, the following revisions were made to the permit:

Page following cover page

- Changed the Responsible Official

Appendix A

- Revised the second sentence under "directions to plant".
- Added portable generator gas engines to the insignificant activity list.

Other Modifications

In addition to the source requested modifications, the Division has included changes to make the permit more consistent with recently issued permits, include comments made by EPA on other Operating Permits, as well as correct errors or omissions identified during inspections and/or discrepancies identified during review of this renewal.

The Division has made the following revisions, based on recent internal permit processing decisions and EPA comments to the Denver Steam Plant Renewal Operating Permit. These changes are as follows:

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- Monitoring and compliance periods and report and certification due dates are shown as examples. The appropriate monitoring and compliance periods and report and certification due dates will be filled in after permit issuance and will be based on permit issuance date. Note that the source may request to keep the same monitoring and compliance periods and report and certification due dates as were provided in the original permit. However, it should be noted that with this option, depending on the permit issuance date, the first monitoring period and compliance period may be short (i.e. less than 6 months and less than 1 year).

Section I – General Activities and Summary

- Revised the description under Condition 1.1 to address the attainment status of the area in which the facility is located.

- In Condition 1.4, the phrase "last paragraph" was added after Section IV, condition 3.g to indicate which part is state-only enforceable. In addition, Section IV, condition 3.d was added as a state only condition in Condition 1.4. Note that Section IV, Condition 3.d (affirmative defense provisions for excess emissions during malfunctions) is state-only until approved by EPA in the SIP.

- Correct they references in Condition 6.1.3, revised from "conditions 5.1.1 and 5.1.2" to "conditions 6.1.1 and 6.1.2, above,"

- Made minor revisions to the language in Section I. 2 (prevention of significant deterioration) to be more consistent with other permits. In addition, revised this condition to address the attainment status of the area in which the facility is located.

- Added a column to the Table in Condition 5.1 for the startup date of the equipment.

Sections II.1 and 2 – Boilers burning either only natural gas or Nos. 1 and/or 2 fuel oil

- The particulate matter emission limits for boilers 1 and 2 are reversed (i.e., the limit for boiler 1 is 0.124 lb/mmBtu and the limit for boiler 2 is 0.120 lb/mmBtu) and have been corrected in the draft permit.

- Based on EPA's response to a petition on another Title V operating permit, minor language changes were made to various permit conditions (both in the table and the text) to clarify that only natural gas and/or No. 2 fuel oil are used as fuel for permit conditions that rely on fuel restriction for the compliance demonstration.

- Revised the language for Condition 2.6. Based on the emission factor used in the calculation and a presumed heat content of 140,000 Btu/gal and sulfur content of 0.5 weight percent for No. 2 fuel oil, the calculated SO_2 emission rate is 0.52 lb/mmBtu, which is well below the limit. In fact, based on a presumed sulfur content of 0.5 weight percent, the heat content of the fuel oil would have to be less than 48,900 Btu/gal in order to exceed the SO_2 limit. Since this is highly unlikely, the language in this condition has been revised to indicate that compliance is presumed whenever No. 2 fuel oil is used as fuel.

- Revised the language for Condition 2.7. The emission factor used in the calculation is independent of sulfur content and based on a presumed heat content of No. 2 fuel oil of 140,000 Btu/gal, the calculated PM emissions are 0.014 lb/mmBtu, which is well below the limit. In fact, the heat content of the fuel oil would have to be less than 16,667 Btu/gal in order to exceed the PM limit. Since this is highly unlikely, the language in this condition has been revised to indicate that compliance is presumed whenever No. 2 fuel oil is used as fuel.

- The language in Condition 2.3 was revised to indicate that the sulfur and heat content are to be used in emission calculations and for reporting purposes, since compliance with the SO_2 and PM limits are presumed, as discussed above.

Section II.4 – Cold Cleaner Solvent Vats

- Added the following note under the table "Note that this emission unit is exempt from the APEN reporting requirements in Regulation No.3, Part A and the construction permit requirements in Regulation No. 3, Part B".

Boiler No. 2 Economizer Addition

During processing of the previous renewal permit (issued January 1, 2002), the Division became aware that an economizer had been installed on Boiler No. 2. During the pre-public comment review period, in a letter dated July 19, 2001, the Division requested that the source provide more information on the economizer. In their August 2, 2001 response, the source indicated that the economizer was installed on Boiler No. 2 in the summer of 1990 and the purpose of the equipment is to pre-heat the boiler feed water in order to increase efficiency. The source indicated that there was no change to the firing rate of the boiler or the heat input rate as a result of the installation of the economizer, although the maximum steam flow capacity from the boiler did increase. In the Division's August 6, 2001 response to comments on the draft renewal permit we agreed that we did not consider the addition of the economizer to be a modification. However, several years later in future activities at other sources, the Division did consider the addition of an economizer to be a modification and other sources took enforceable limits in order to keep any increase in emissions below the PSD significance levels. Therefore, during this renewal, the Division is re-investigating this particular issue to see if any additional permitting action is required for the addition of the economizer to Boiler No. 2.

The Denver Steam Plant is an existing major stationary source and any modification at an existing major stationary source that results in a net emission increase above the significance level will trigger the PSD and/or NANSR requirements. In this particular case, since fuel oil is used as a back-up fuel, the only pollutant likely to result in a net emission increase above the significance level is NO_X. The Division requested that the source provide actual fuel use for Boiler No. 2 for the two years prior to the addition of the economizer through 2007. In their January 29, 2009 comments on the draft permit, the source indicated that individual fuel use records prior to 1992 were not available. Therefore, the analysis is based on emissions from both units. Note that Boiler No. 1 is used as a back-up unit so the majority of the fuel use is for Boiler No. 2. Data provided by the source indicates that for the years 1990 through 2007, there has not been a significant increase (> 40 tons per year) in NO_X emissions as compared to the baseline level (average of 1988 and 1989 emissions). The highest increase in emissions (30 tons/yr) occurred in 2002. Therefore, the Division has concluded that while the economizer may have been considered a modification, it did not trigger PSD or NANSR review requirements. Since there has not been an increase in actual emissions above the significance level in the 18 years since the economizer has been installed, the

Division does not consider that it is necessary for the source to take enforceable limits to keep future emission increases below the significance level. The Division considers that if in the future, there is an increase in actual emissions above the significance level that it will be unrelated to the economizer project. Therefore, no further permitting action is required.

Ozone Early Action Compact Requirements (Reg 7)

The Division entered into an early action compact to delay being re-designated as a non-attainment area for the 8-hour ozone standard. The early action compact requires controls to reduce VOC emissions in the 8-hour ozone control area. The early action compact VOC control requirements have been included in Colorado Regulation No. 7 and those requirements became effective, on a state-only basis, on May 31, 2004 and on a state and federal basis effective on September 19, 2005 (EPA approval published in the August 19, 2005 federal register). Although the 8-hour ozone control area has since been re-designated as a non-attainment area, the provisions for the 8-hour ozone control area still apply. The VOC control requirements apply to oil and gas operations (Colorado Regulation No. 7, Section XII) and stationary internal combustion engines (Colorado Regulation No. 7, Section XVI) located in the 8-hour ozone control area. Since the facility is not involved in oil and gas operations, only the stationary internal combustion engine requirements potentially apply to this facility. The stationary internal combustion engine requirements apply to engines larger than 500 hp and that burn natural gas as fuel. There are no internal combustion engines identified in Section II of the permit. In addition, although internal combustion engines have been identified in the insignificant activity list in Appendix A of this permit, none of these engines are larger than 500 hp or burn natural gas as fuel.

Section III – Permit Shield

- The citation for the permit shield has been revised to make corrections (Part C, Section XIII, should be XIII.B) and to remove Reg 3, Part C, Section V.C.1.b and C.R.S. § 25-7-111(2)(I) since they don't address the permit shield.

- Under section 1 (specific non-applicable requirements), the sentence "The Permit Shield was not Requested" was replaced with the following sentence "The permittee did not request the permit shield for any specific non-applicable requirements".

Section IV – General Conditions

- Revisions were made to the Common Provisions Regulation (general condition 3), effective September 30, 2002 and December 15, 2006 (effective March 4, 2007). The appropriate revisions were made to the language in the permit. The September 30, 2002 revisions were minor in nature. The December 15, 2006 revisions replaced the upset provisions with the affirmative defense provisions for excess emissions during malfunctions. Note that these provisions for malfunctions are state-only enforceable until approved by EPA into Colorado's state implementation plan (SIP).

- Removed the phrase regarding state-only enforceability in general condition 3.g (common provisions – affirmative defense for excess emissions during startup and shutdown). The affirmative defense provisions for excess emissions were approved by EPA into Colorado's SIP, except for the last paragraph. The state-only enforceable portion is noted in Section I, Condition 1.4.

- Replaced the reference to "upset" in Condition 5 (emergency provisions) and 21 (prompt deviation reporting) with "malfunction".

- General Condition No. 21 (prompt deviation reporting) was revised to include the definition of prompt in 40 CFR Part 71.

- Replaced the phrase "enhanced monitoring" with "compliance assurance monitoring" in General Condition No. 22.d.

<u>Appendices</u>

- Revised the insignificant activity category for the potable welder gas engines. There is no longer a category for non-road engines, but there is one for stationary internal combustion engines.

- Appendix B and C were replaced with latest version.

- Changed the mailing address for EPA in Appendix D.

Total HAP Emissions (tons/yr) from Denver Steam - Natural Gas

Emission Unit	formaldehyde	acetaldehyde	toluene	benzene	acrolein	xylene	chloroform	hexane	dichlorobenzene	nickel	cadmium	chromium	Total
Boiler No. 1	6.76E-02		3.07E-03	1.89E-03				1.62E+00	1.08E-03	1.89E-03	9.92E-04	1.26E-03	1.70E+00
Boiler No. 2	7.83E-02		3.55E-03	2.19E-03				1.88E+00	1.25E-03	2.19E-03	1.15E-03	1.46E-03	1.97E+00
Total	1.46E-01	0.00E+00	6.61E-03	4.08E-03	0.00E+00	0.00E+00	0.00E+00	3.50E+00	2.33E-03	4.08E-03	2.14E-03	2.72E-03	3.67E+00

Emission factors from AP-42, Section 1.4 (dated 3/98), Tables 1.4-3 and 1.4-4.

Total HAP Emissions (tons/yr) from Denver Steam - No. 2 Fuel Oil

Emission Unit	formaldehyde	naphthalene	toluene	benzene	TCA	xylene	chloroform	hexane	dichlorobenzene	nickel	cadmium	chromium	Total
Boiler No. 1	2.17E-01	7.42E-03	4.07E-02	1.41E-03	1.55E-03					5.55E-01			0.82
Boiler No. 2	2.51E-01	8.59E-03	4.71E-02	1.63E-03	1.79E-03					6.42E-01			0.95
Total	4.68E-01	1.60E-02	8.79E-02	3.03E-03	3.34E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E+00	0.00E+00	0.00E+00	1.78E+00

Emission factors from AP-42, Section 1.3 (dated 9/98), Tables 1.3-9 and 1.3-11. Note that these tables are for residual oil, so factors are most likely conservative.